



**Sexual Risk Behavior and HIV Treatment Optimism:  
HIV-Positive Persons  
at  
Ryan White CARE Act Providers in Orange County**

**Orange County Health Care Agency,  
Office of HIV Programs**

**Public Statistics Institute**

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## EXECUTIVE SUMMARY

New HIV treatments have improved the health and increased the life expectancy of many HIV-positive persons. In doing so, the treatments have raised two new public health issues. One is that enhancements in the health and longevity of HIV-positive persons will likely be accompanied by greater sexual activity, and this in turn increases the opportunity for HIV transmission. The other issue is that the success of the new treatments may be affecting beliefs about the seriousness of HIV and consequently adherence to safer sex practices. To help guide policy on these issues, this study surveyed 513 HIV-positive persons about their HIV beliefs in light of the new treatments. Sexual behavior was also surveyed. All respondents were clients at Orange County Ryan White CARE Act providers.

### Selected Findings

#### **Beliefs**

Respondents were asked to indicate how much they agreed with the following statement: *"In general, people are less worried now about getting HIV than they used to be."* About half of the respondents (52%) reported that they agreed (either strongly agreed or somewhat agreed).

Respondents were also asked to indicate how much they agreed that *"Because of new HIV treatments such as protease inhibitors, HIV is no longer a life threatening disease."* About one-third (36%) agreed (either strongly or somewhat).

When asked about the statement *"HIV-positive persons are less likely to transmit HIV during sex if they use the new HIV treatments,"* about one in seven (14%) agreed (either strongly or somewhat).

When asked about the statement *"I am more willing to have sex without a condom because of new treatments for HIV,"* about one in fourteen (7%) agreed (either strongly or somewhat).

#### **Sexual Behavior**

The majority (62%) of the respondents reported they had anal and/or vaginal sex in the past six months.

Of the respondents reporting anal/vaginal sex in the past six months, 61% reported always using a condom during such sex; 39% reported anal/vaginal sex at least once without a condom (i.e. unprotected anal/vaginal sex).

Two hundred and fifteen respondents (42% of the total sample) reported anal sex in the past six months. Of these, 38% reported unprotected anal sex. One hundred and forty-one respondents (27% of the total sample) reported vaginal sex in the past six months. Of these, 40% reported unprotected vaginal sex.

The respondents were asked to indicate whether they had a steady sexual partner at the time they completed the survey questionnaire. About half (51.5%) of the total sample reported a steady sexual partner; 48.5% reported no such partner.

The respondents were asked to report the number of different persons with whom they had had sex (type of sex was not specified) in the past six months. Fifteen percent reported three or more sexual partners, 11% reported two partners, 45% reported one partner, and 29% reported no partners.

Respondents were asked, "In the last six months, about how often did you discuss HIV before you had sex?" Of those who reported anal/vaginal sex, 22% said *Always*, 10% said *Usually*, 25% said *Sometimes*, and 43% said *Rarely/Never*.

Respondents were asked if any of their sexual partners were HIV negative. Of those who reported anal/vaginal sex, 45% said *Yes*, 31% said *No*, and 24% said they *Did Not Know*.

Among respondents who reported anal/vaginal sex, those who did not know the HIV status of their partners were significantly more likely to report multiple sexual partners. For example, while 37% of those reporting HIV-negative partners had multiple sexual partners, 69% of those who did not know their partners' HIV status had multiple sexual partners.

### **Beliefs and Unprotected Sex**

Agreement with the statement, *I am more willing to have sex without a condom because of new treatments for HIV*, was a statistically significant predictor of unprotected anal/vaginal sex.

Agreement with the statements regarding (1) *less worry about getting HIV*, (2) *HIV is no longer a life-threatening disease*, and (3) *HIV-positive persons are less likely to transmit HIV* was not found to be associated with unprotected anal/vaginal sex.

## **Conclusion**

This study's findings show substantial optimism among respondents regarding HIV. One in two respondents agreed that people now are less worried about getting HIV than they used to be. And one in three agreed that because of new HIV treatments, HIV is no longer a life-threatening disease. Such optimism suggests that prevention messages which rely on death or danger-avoidance for motivation may not be effective with a large segment of the HIV-positive population. Instead, messages that emphasize other motivating factors (e.g., altruism) may prove to be more useful.

The majority of the respondents engaged in anal and/or vaginal sex in the past six months, and the majority of those engaging in such sex followed safer sex practices. This notwithstanding, 39% of those engaging in anal/vaginal sex (24% of the total sample) reported unprotected anal/vaginal sex. Moreover, many respondents had multiple partners, did not discuss HIV before having sex, and did not know the HIV status of their sexual partners. These are serious risk factors for the transmission of HIV and should be the focus of prevention services.

The finding that willingness *to have sex without a condom because of new treatments for HIV* predicted unprotected sex is consistent with the public health concern that safer sex practices are being adversely affected by beliefs about HIV treatments. Note, however, the

finding is correlational in nature and thus does not establish a causal relationship. Research designed to assess causality is needed to complement the findings presented here.

**Limitations**

Behavior related to sensitive topics such as those considered in this survey tend to be underreported. Ryan White CARE Act clients may differ from HIV-positive persons who are not such clients. As with most survey research on HIV-positive persons, probabilistic sampling was not used to select respondents, thus limiting the ability to generalize results to persons not in the study (including other Ryan White CARE Act clients). Beliefs about HIV treatments will likely change as advances in the treatment of HIV continue.

## INTRODUCTION

HIV-positive persons are the only individuals who can transmit HIV. When engaging in unprotected sex, they can also be infected with new strains of HIV as well as other diseases (e.g., syphilis and gonorrhea) which can adversely affect the immune system. Moreover, HIV-positive persons receiving HIV treatments (antiretroviral therapies) may be at increased risk of transmitting drug-resistant strains of HIV when having unprotected sex and thus exacerbating the spread of drug-resistant HIV.<sup>1-3</sup> For these reasons, HIV-positive persons need sexual risk-behavior prevention services.

To effectively guide such services, data on the sexual risk behaviors of HIV-positive persons is critical.<sup>4</sup> Yet little such data currently exists, possibly because it is assumed that HIV-positive persons, or at least those who know they are HIV positive, do not engage in sexual risk behaviors, as the consequences of doing so would seem to be too serious. HIV has also been viewed as a death sentence, leading to an emphasis on medical and social services that support the final stages of life. From this perspective, prevention services and data to support them may appear irrelevant. HIV researchers, most of whom focus on medical issues, may also have shied away from studying the sexual behavior of HIV-positive persons for fear of adding stigma to a group already subject to substantial discrimination.

This notwithstanding, new HIV treatments have improved the health and increased the life expectancy of many HIV-positive persons.<sup>5</sup> In doing so, the treatments have raised two new public health issues. One is that enhancements in the health and longevity of HIV-positive persons will likely be accompanied by greater sexual activity, and this in turn increases the opportunity for HIV transmission. The other issue is that the success of the new treatments may be reducing concern about HIV and consequently adherence to safer sex practices. In light of this, policy makers and researchers have begun calling for research on the sexual behavior and treatment-related beliefs of HIV-positive persons.<sup>4,6,7</sup>

Although HIV was identified more than 15 years ago, a review paper published in 1999 was able to locate only 14 studies on the sexual behavior of HIV-positive persons.<sup>4</sup> The majority of the studies were conducted prior to the advent of the new HIV treatments, and five included samples of less than 100 persons. The studies varied widely regarding types of persons sampled, sexual behaviors measured, time frames (from one week to 12 months) used to assess the occurrence of sexual behaviors, and results. The studies did not lend themselves to a summary, and the authors of the review offered none. In the most recent study (published in 1998) considered in the review, 242 men-who-have-sex-with-men were surveyed at multiple venues, including bars, organizations, and public sex environments in New York and San Francisco.<sup>8</sup> Of these, 22% reported unprotected insertive anal intercourse with HIV-negative or unknown serostatus partners in the past year. Only a few studies on the sexual behavior of HIV-positive persons have been published since the review. Among the most notable of these is a CDC survey that was conducted in 12 states.<sup>9</sup> It found that 45% of approximately 850 sexually active HIV-positive heterosexual women reported unprotected vaginal sex in the past year; 10% reported unprotected anal sex. Of approximately 1250 sexually active HIV-positive heterosexual men considered in the same study, 32% reported unprotected vaginal sex in the past year; 12% reported unprotected anal sex.

To date, information on HIV treatment beliefs has also been limited and, more often than not, obtained from persons who are HIV negative. The research conducted thus far suggests that many people now are less concerned about HIV. For example, Dilley et al. surveyed 54 HIV-negative gay men in San Francisco and found that, because of the new treatments for HIV, 26% said they were less concerned about becoming HIV positive and 13% said they were more willing to take a chance of getting infected when having sex.<sup>10</sup> Kelly et al. surveyed 379 gay/bisexual men at a gay pride festival and clinics in a large mid-western city and found that 13% agreed that the threat of AIDS is now less serious than in the past.<sup>11</sup> In a survey of HIV-positive persons (147 HIV-infected persons attending a university-based HIV clinic), Kravcik et al. found that 19% believed that the need for safer sexual practices was reduced by protease inhibitor therapy.<sup>12</sup>

Only a small number of studies have examined whether persons who are now less concerned (more optimistic) about HIV are more likely to have unprotected sex. The findings here are inconsistent, and again most of the research has focused on persons who are HIV negative. A study of the general public in Germany found no evidence that reports of the new treatments were associated with a decrease in protective behaviors.<sup>13</sup> Periodic surveys of gay men in Sydney conducted during 1996-1998 found that beliefs about new treatments for HIV were generally unrelated to findings of increased unprotected sex with casual partners.<sup>14</sup> In contrast, a study of gay men in London found that those who were less worried about HIV infection in light of the new treatments were more likely to report unprotected sex.<sup>15</sup> Similarly, a study of HIV-negative gay/bisexual men attending a gay pride festival in Atlanta, GA found that persons who were less worried about unprotected sex in light of the new treatments were more likely to report unprotected sex.<sup>16</sup> In a study of serodiscordant male couples living in New York, researchers found that optimism about the new treatments predicted unprotected sex for HIV-negative men but not for HIV-positive men.<sup>17,18</sup> In a study of serodiscordant male couples living in San Francisco researchers found no relationship between decreased transmission concerns in light of the new treatments and unprotected sex for either HIV-negative or HIV-positive men.<sup>19</sup>

Van de Ven et al. have suggested that discrepancies in studies on HIV beliefs and sexual behavior may be due in part to a statistical artifact.<sup>20</sup> Most of the studies divided subjects into two groups (persons who were more optimistic about HIV in light of the new treatments versus persons who were not) and simply examined whether persons who were more optimistic were more likely to report unprotected sex. In general, little or no attempt was made to control for differences in the age, education, health, and so on of the two groups. These potentially confounding factors could have accounted for differences in unprotected sex between the two groups, and they could have masked differences that were not found. Van de Ven et al. conducted a study in Australia that used a multivariate statistical analysis to control for several confounding factors while analyzing HIV optimism and sexual behavior.<sup>20</sup> They found that persons who were less concerned about HIV because of the new treatments were more likely to have had unprotected sex. More multivariate studies of HIV optimism and sexual behavior are needed.

The present study provides data on the sexual behavior of HIV-positive persons and their beliefs about new treatments for HIV. The sexual behaviors considered include anal and vaginal sex with and without a condom, the absence of anal and vaginal sex, and sex with multiple partners. The beliefs, which can be viewed as measures of treatment optimism, address the perceived effectiveness and impact of HIV treatments; for example, whether



HIV is “no longer a life-threatening disease” because of the new treatments, and whether the new treatments reduce the likelihood of transmitting HIV during sex. The study also examines whether treatment beliefs predict safer sexual behavior (i.e. anal/vaginal sex with a condom). Participants in the study are HIV-positive persons who received services at Ryan White CARE Act providers in Orange County, CA.

## METHODS

In June and July of 2000, HIV-positive persons receiving services at nine Ryan White CARE Act providers in Orange County, CA were asked to complete a self-administered questionnaire. Upon completion the respondents placed the questionnaire in a sealed unmarked envelope to ensure anonymity. The questionnaire was offered in English or Spanish and averaged about ten minutes to complete. Participation was voluntary. Five-dollar food vouchers or 30-minute phone cards were offered as incentives. Personnel at each of the service provider sites distributed the questionnaire to clients. These personnel reported that clients rarely declined to participate in the survey, in part because of the incentives. The present study’s research staff corroborated these reports by periodically observing administration of the questionnaires at the provider sites. The response rate was not quantified because doing so was deemed impractical, primarily due to the service personnel’s existing work load. Five hundred thirteen people completed the questionnaire. Each questionnaire was reviewed for inconsistent and incomplete answers. Statistical tests of significance are reported for chi square and ordinal logistic regression analyses only. All other data are presented solely for descriptive (rather than inferential) purposes. Ordinal logistic regression procedures were performed using GOLDMineR 2.0 software.<sup>21</sup> Due to missing data, the number of respondents differs across analyses.

All of the Ryan White CARE Act providers asked to participate in the survey agreed to do so. The names of the providers are not listed here to help preserve the privacy of the respondents.

## RESULTS

### Respondent Characteristics

Characteristics of the respondents are shown in Table 1. Almost two-thirds of the respondents were 30-44 years of age. About eight in ten were males. Latinos were the largest ethnic group, constituting about half (50.9%) of the respondents. Whites (40.0%) were the second largest group. African Americans, the third largest group, constituted 5.1% of the respondents. Fifty-seven percent of the respondents were gay or lesbian. About half had a high school education or less; 13.7% were college graduates. Approximately eight in ten had annual incomes below \$20,000. Most of the respondents (82.3%) reported being infected with HIV through sex. Injection drug use was reported as the source of HIV infection by 11.5% of the respondents.

For this study, a low viral load is one self-reported as undetectable and/or self-reported as 50 or less. About four in ten respondents (41.6%) reported a low viral load, 36.3% reported a higher viral load, and 22.1% did not report/did not know their viral load.

**Table 1. Respondent Characteristics**

|   | <u>%</u> |  | <u>%</u> |
|---|----------|--|----------|
| Age (N = 494)                                       |          | Education (N = 495)                          |          |
| 18-29   | 14.0     | Less than high school                        | 24.0     |
| 30-44   | 62.6     | High school graduate                         | 23.8     |
| 45+   | 23.5     | Trade/technical training<br>past high school | 05.7     |
|   |          | Some college                                 | 32.7     |
| Gender (N = 508)                                    |          | College graduate                             | 13.7     |
| Male  | 79.1     | Annual Income (N = 485)                      |          |
| Female  | 17.9     | Less than \$10,000                           | 50.5     |
| Transgender   | 03.0     | \$10,000 to \$19,000                         | 31.0     |
|   |          | \$20,000 to \$29,000                         | 10.5     |
| Ethnicity (N = 507)                                 |          | \$30,000 to \$39,000                         | 04.9     |
| Latino  | 50.9     | \$40,000+                                    | 03.1     |
| White (not Latino)                                  | 40.0     |  |          |
| African American                                    | 05.1     | Sexual Orientation (N = 465)                 |          |
| Asian   | 01.8     | Gay/Lesbian                                  | 57.2     |
| Other   | 02.2     | Bisexual                                     | 11.2     |
|   |          | Straight                                     | 31.6     |
| Ethnicity by Language of<br>Questionnaire (N = 491) |          | Source of HIV (N = 485)                      |          |
| White (not Latino)/Other<br>(English Quest.)        | 46.4     | Sex with a man                               | 69.3     |
| Latino (English Quest.)                             | 16.7     | Sex with a woman                             | 13.0     |
| Latino (Spanish Quest.)                             | 36.9     | Injection drug use                           | 11.5     |
|   |          | Blood transfusion                            | 03.9     |
|   |          | Other  | 02.3     |

## **Sexual Behavior**

The respondents were asked whether they had had anal/vaginal sex in the past six months. Of 483 who answered, 62.1% ( $n = 300$ ) reported having had anal and/or vaginal sex, 37.9% ( $n = 183$ ) reported no such sex.

Of the 300 respondents reporting anal/vaginal sex in the past six months, 60.7% ( $n = 182$ ) reported always using a condom during that period; 39.3% ( $n = 118$ ) reported sex at least once without a condom (i.e. unprotected anal/vaginal sex). The 118 respondents reporting anal/vaginal sex without a condom constitute 24.4% of the total sample of 483 persons reporting information on anal/vaginal sex.

Two hundred and fifteen respondents (42% of the total sample) reported anal sex in the past six months. Of these, 37.7% reported unprotected anal sex. One hundred and forty-one respondents (27% of the total sample) reported vaginal sex in the past six months. Of these, 39.7% reported unprotected vaginal sex.

The respondents were asked to report the number of different persons with whom they had sex in the past six months. (Note that type of sex was not specified for the respondents.) Of 478 respondents who answered this question, 15.5% reported three or more sexual partners, 10.9% reported two partners, 45.0% reported one partner, and 28.7% reported no partners. Of the respondents who reported anal/vaginal sex, 24.0% reported three or more partners, 15.6% reported two partners, and 60.4% reported one partner.

The respondents were asked to indicate whether they had a steady sexual partner at the time they completed the questionnaire. Of 499 respondents who answered, 51.5% reported a steady sexual partner; 48.5% reported no such partner.

Respondents who reported anal/vaginal sex were asked, "In the last six months, about how often did you discuss HIV before you had sex?" Of the 290 who responded, 21.7% said *Always*, 10.3% said *Usually*, 24.5% said *Sometimes*, and 43.4% said *Rarely/Never*.

Respondents who reported anal/vaginal sex were also asked if any of their sexual partners were HIV negative. Of these, 45.0% said yes, 30.8% said no, and 24.2% said they did not know. Among respondents who reported anal/vaginal sex, those who did not know the HIV status of their partners were significantly more likely to report multiple sexual partners (Table 2). For example, while 37.0% of those reporting HIV-negative partners had multiple sexual partners, 68.8% of those who did not know their partners' HIV status had multiple sexual partners.

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**Table 2. Respondents Who Reported Anal/Vaginal Sex in the Past Six Months: Knowledge of Sexual Partner's HIV Status by Number of Sexual Partners**

|                                | At Least One HIV-<br>Negative Partner<br>% | HIV-Positive<br>Partner(s) Only<br>% | Don't Know<br>Whether Any<br>Partners Were HIV<br>Negative<br>% |
|--------------------------------|--|--------------------------------------|---|
| One Sexual Partner             | 63.0                                       | 80.7                                 | 31.3  |
| Two or More Sexual<br>Partners | 37.0                                       | 19.3                                 | 68.8  |

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Note. Chi Square = 37.6,  $df = 2$ ,  $p < .001$ , ( $n = 274$ ).

## **Beliefs**

To help assess the respondents' optimism about HIV and new treatments, they were presented with four belief questions. The first question asked respondents to indicate how much they agreed with the following statement: *"In general, people are less worried now about getting HIV than they used to be."* The response categories were *Strongly Agree*, *Somewhat Agree*, *Somewhat Disagree*, *Strongly Disagree*, and *Don't Know*. (These same response categories were used for all four questions addressed in this section.) About half of the respondents (52.3%) reported that they agreed (either strongly or somewhat) that people are now less concerned about getting HIV (Table 3). Only 18% strongly disagreed with the statement.

Respondents were also asked to indicate how much they agreed that *"Because of new HIV treatments such as protease inhibitors, HIV is no longer a life-threatening disease."* About one-third (36.6%) agreed (either somewhat or strongly).

The respondents were asked whether they agreed that *"HIV-positive persons are less likely to transmit HIV during sex if they use the new treatments."* About one in seven (14.3%) agreed (either somewhat or strongly).

Finally, the respondents were asked how much they agreed with the following statement, *"I am more willing to have sex without a condom because of new treatments for HIV."* About one in fourteen (7.0%) agreed (either somewhat or strongly) that they were more likely to have sex without a condom.

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**Table 3. HIV Beliefs**

|  | Strongly<br>Agree<br>% | Somewhat<br>Agree<br>% | Somewhat<br>Disagree<br>% | Strongly<br>Disagree<br>% | Don't<br>Know<br>% |
|--|------------------------|------------------------|---------------------------|---------------------------|--------------------|
| People are less worried now about getting HIV                            | 13.4                   | 38.9                   | 21.5                      | 18.0                      | 08.1               |
| HIV is no longer a life-threatening disease because of new treatments    | 11.4                   | 24.2                   | 19.1                      | 41.7                      | 03.7               |
| HIV transmission is less likely when new treatments are used             | 07.8                   | 06.5                   | 13.1                      | 64.1                      | 08.4               |
| I am more willing to have sex without a condom because of new treatments | 04.0                   | 03.0                   | 8.5                       | 81.2                      | 03.4               |

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Note. The number of respondents answering these questions ranged from 505 to 510.

## Respondent Characteristics and Beliefs

The four belief questions crosstabulated with respondent characteristics are shown in Table 4. Various subgroups of the respondents appear to differ in their beliefs about HIV treatments. For example, 54.3% of older respondents (age 45+) strongly disagreed with the statement that *HIV is no longer a life-threatening disease*, whereas only 23.5% of the younger respondents (age 18-29) did so. Eighty-six percent of respondents reporting a low viral load strongly disagreed with the statement, *I am more willing to have sex without a condom because of new treatments*. In contrast, only 71.6% of those reporting a higher viral load strongly disagreed.

The data in Table 4 are useful as initial information about the association between the respondents' treatment beliefs and demographics. However, the data describe bivariate relationships, and such relationships are difficult to interpret because they can be confounded with other variables. To address this, each belief was regressed on respondent characteristics using ordinal logistic regression, a multivariate statistical procedure that can indicate which of the characteristics make independent contributions to explaining the beliefs.

The regression analysis indicated that in comparison to Latino respondents who completed the questionnaire in Spanish, Latino respondents who completed the questionnaire in English were more likely to disagree with the statement that *people are less worried now about getting HIV* (Table 5). Respondents who did not know/did not report their viral load were more likely to disagree with the statement than were respondents who reported a higher viral load. However, significant differences regarding the statement were not found between respondents who reported a higher viral load and respondents who reported a low viral load.

Older people were more likely to disagree with the statement that *HIV is no longer a life-threatening disease because of new HIV treatments*. Latinos who completed the questionnaire in Spanish were more likely to agree with the statement than were Latinos who completed the questionnaire in English and Whites/Others. (Note: "Whites/Others" refers to persons who self-identified as White or another ethnic/racial group other than Latino—for example, African American or Asian. Whites and other non-Latino groups were merged into a single category because respondents who self-identified as African American, Asian, and so on were too few in number to reliably analyze separately.)

Similarly, Latinos who completed the questionnaire in Spanish were more likely to agree with the statement that *HIV-positive persons are less likely to transmit HIV during sex if they use the new treatments* than were Latinos who completed the questionnaire in English. No other demographics were found to be associated with this statement.

Finally, education and viral load status were associated with the statement about being *willing to have sex without a condom because of new treatments for HIV*. In comparison to persons who had a high school education only, persons who had less than a high school education were more likely to agree with the statement. In comparison to persons who had an undetectable viral load and to persons who did not know or did not report their viral load, persons who reported a detectable viral load were more likely to agree with the statement.

**Table 4. HIV Beliefs by Respondent Characteristics**

|                            | In general, people are less worried now about getting HIV than they used to be |                                   |                               |                                      |                                      | Because of new HIV treatments such as protease inhibitors, HIV is no longer a life-threatening disease |                                   |                               |                                      |                                      |
|----------------------------|--|-----------------------------------|-------------------------------|--------------------------------------|--------------------------------------|--|-----------------------------------|-------------------------------|--------------------------------------|--------------------------------------|
|                            | <i>Strongly Agree</i><br><u>%</u>  | <i>Somewhat Agree</i><br><u>%</u> | <i>Don't Know</i><br><u>%</u> | <i>Somewhat Disagree</i><br><u>%</u> | <i>Strongly Disagree</i><br><u>%</u> | <i>Strongly Agree</i><br><u>%</u>  | <i>Somewhat Agree</i><br><u>%</u> | <i>Don't Know</i><br><u>%</u> | <i>Somewhat Disagree</i><br><u>%</u> | <i>Strongly Disagree</i><br><u>%</u> |
| Age                        |  |                                   |                               |                                      |                                      |  |                                   |                               |                                      |                                      |
| 18-29                      | 11.6   | 43.5                              | 08.7                          | 17.4                                 | 18.8                                 | 10.3   | 39.7                              | 02.9                          | 23.5                                 | 23.5                                 |
| 30-44                      | 13.8   | 34.4                              | 09.2                          | 23.9                                 | 18.7                                 | 12.7   | 22.5                              | 03.9                          | 19.0                                 | 41.8                                 |
| 45+                        | 11.4   | 51.8                              | 04.4                          | 17.5                                 | 14.9                                 | 06.0   | 20.7                              | 01.7                          | 17.2                                 | 54.3                                 |
| Gender                     |  |                                   |                               |                                      |                                      |  |                                   |                               |                                      |                                      |
| Male/Transgender           | 12.4   | 39.3                              | 08.5                          | 22.6                                 | 17.2                                 | 11.1   | 24.1                              | 03.6                          | 18.1                                 | 43.1                                 |
| Female                     | 15.7   | 39.3                              | 06.7                          | 16.9                                 | 21.3                                 | 11.2   | 24.7                              | 02.2                          | 24.7                                 | 37.1                                 |
| Acculturation <sup>a</sup> |  |                                   |                               |                                      |                                      |  |                                   |                               |                                      |                                      |
| White/Other (Engl.)        | 09.2   | 48.7                              | 06.6                          | 21.5                                 | 14.0                                 | 02.6   | 26.1                              | 01.8                          | 20.7                                 | 48.9                                 |
| Latino (Engl.)             | 11.1   | 32.1                              | 03.7                          | 29.6                                 | 23.5                                 | 07.4   | 17.3                              | 04.9                          | 19.8                                 | 50.6                                 |
| Latino (Span.)             | 19.8   | 28.8                              | 12.4                          | 17.5                                 | 21.5                                 | 24.0   | 25.7                              | 05.6                          | 16.2                                 | 28.5                                 |
| Sexual Orientation         |  |                                   |                               |                                      |                                      |  |                                   |                               |                                      |                                      |
| Gay/Lesbian                | 12.6   | 45.0                              | 06.1                          | 19.5                                 | 16.8                                 | 09.8   | 22.9                              | 03.4                          | 18.0                                 | 45.9                                 |
| Bisexual                   | 13.5   | 40.4                              | 11.5                          | 23.1                                 | 11.5                                 | 15.7   | 31.4                              | 02.0                          | 19.6                                 | 31.4                                 |
| Straight                   | 14.6   | 30.2                              | 09.9                          | 24.0                                 | 21.4                                 | 12.5   | 24.0                              | 04.7                          | 20.3                                 | 38.5                                 |
| Education                  |  |                                   |                               |                                      |                                      |  |                                   |                               |                                      |                                      |
| < high school              | 12.6   | 45.0                              | 06.1                          | 19.5                                 | 16.8                                 | 15.4   | 32.5                              | 05.1                          | 17.9                                 | 29.1                                 |
| High school                | 13.5   | 40.4                              | 11.5                          | 23.1                                 | 11.5                                 | 08.6   | 23.3                              | 04.3                          | 19.8                                 | 44.0                                 |
| > high school              | 14.6   | 30.2                              | 09.9                          | 24.0                                 | 21.4                                 | 08.1   | 20.5                              | 02.3                          | 20.2                                 | 48.8                                 |
| Viral Load Status          |  |                                   |                               |                                      |                                      |  |                                   |                               |                                      |                                      |
| Undetectable               | 12.3   | 38.4                              | 10.0                          | 18.5                                 | 20.9                                 | 10.4   | 23.2                              | 01.9                          | 21.8                                 | 42.7                                 |
| Detectable                 | 16.5   | 44.0                              | 03.3                          | 22.0                                 | 14.3                                 | 10.3   | 24.5                              | 01.6                          | 18.5                                 | 45.1                                 |
| Unknown/Not Reported       | 10.6   | 31.9                              | 12.4                          | 26.5                                 | 18.6                                 | 14.9   | 25.4                              | 10.5                          | 14.9                                 | 34.2                                 |
| Steady Sexual Partner      |  |                                   |                               |                                      |                                      |  |                                   |                               |                                      |                                      |
| Yes                        | 11.9   | 41.3                              | 07.1                          | 21.0                                 | 18.7                                 | 14.2   | 25.2                              | 03.1                          | 18.5                                 | 39.0                                 |
| No                         | 15.1   | 37.7                              | 09.2                          | 21.3                                 | 16.7                                 | 07.5   | 23.8                              | 02.9                          | 20.0                                 | 45.8                                 |

<sup>a</sup>Engl. = English questionnaire. Span. = Spanish questionnaire.

**Table 4 (continued). HIV Beliefs by Respondent Characteristics**

|                            | HIV-positive persons are less likely to transmit HIV during sex if they use the new HIV treatments |                         |                     |                            |                            | I am more willing to have sex without a condom because of new treatments for HIV |                         |                     |                            |                            |
|----------------------------|--|-------------------------|---------------------|----------------------------|----------------------------|--|-------------------------|---------------------|----------------------------|----------------------------|
|                            | <i>Strongly Agree %</i>  | <i>Somewhat Agree %</i> | <i>Don't Know %</i> | <i>Somewhat Disagree %</i> | <i>Strongly Disagree %</i> | <i>Strongly Agree %</i>  | <i>Somewhat Agree %</i> | <i>Don't Know %</i> | <i>Somewhat Disagree %</i> | <i>Strongly Disagree %</i> |
| Age                        |  |                         |                     |                            |                            |  |                         |                     |                            |                            |
| 18-29                      | 07.2   | 04.3                    | 13.0                | 20.3                       | 55.1                       | 05.9   | 05.9                    | 02.9                | 08.8                       | 76.5                       |
| 30-44                      | 08.2   | 06.2                    | 08.2                | 12.4                       | 65.0                       | 02.3   | 01.6                    | 03.6                | 08.9                       | 83.6                       |
| 45+                        | 05.2   | 09.5                    | 05.2                | 10.3                       | 69.8                       | 05.2   | 05.2                    | 03.5                | 07.8                       | 78.3                       |
| Gender                     |  |                         |                     |                            |                            |  |                         |                     |                            |                            |
| Male/Transgender           | 07.7   | 06.8                    | 07.0                | 12.3                       | 66.2                       | 03.4   | 03.2                    | 02.2                | 09.0                       | 82.2                       |
| Female                     | 07.7   | 04.4                    | 13.2                | 17.6                       | 57.1                       | 05.6   | 02.2                    | 09.0                | 06.7                       | 76.4                       |
| Acculturation <sup>a</sup> |  |                         |                     |                            |                            |  |                         |                     |                            |                            |
| White/Other (Engl.)        | 03.5   | 06.1                    | 09.2                | 14.0                       | 67.1                       | 02.2   | 03.1                    | 04.0                | 10.2                       | 80.5                       |
| Latino (Engl.)             | 06.2   | 04.9                    | 08.6                | 09.9                       | 70.4                       | 06.2   | 03.7                    | 03.7                | 08.6                       | 77.8                       |
| Latino (Span.)             | 14.0   | 08.4                    | 07.3                | 12.8                       | 57.5                       | 05.1   | 02.8                    | 02.8                | 06.8                       | 82.4                       |
| Sexual Orientation         |  |                         |                     |                            |                            |  |                         |                     |                            |                            |
| Gay/Lesbian                | 06.8   | 06.8                    | 06.0                | 12.5                       | 67.9                       | 03.8   | 03.4                    | 01.5                | 09.5                       | 81.8                       |
| Bisexual                   | 07.8   | 09.8                    | 13.7                | 15.7                       | 52.9                       | 02.0   | 00.0                    | 05.9                | 11.8                       | 80.4                       |
| Straight                   | 09.3   | 05.2                    | 10.3                | 13.4                       | 61.9                       | 04.7   | 03.2                    | 05.3                | 06.3                       | 80.5                       |
| Education                  |  |                         |                     |                            |                            |  |                         |                     |                            |                            |
| < high school              | 11.1   | 08.5                    | 09.4                | 12.8                       | 58.1                       | 05.2   | 04.3                    | 04.3                | 07.8                       | 78.4                       |
| High school                | 09.3   | 06.8                    | 09.3                | 12.7                       | 61.9                       | 00.0   | 03.4                    | 05.2                | 09.5                       | 81.9                       |
| > high school              | 03.9   | 05.4                    | 07.4                | 13.6                       | 69.6                       | 04.3   | 02.3                    | 01.9                | 08.6                       | 82.9                       |
| Viral Load Status          |  |                         |                     |                            |                            |  |                         |                     |                            |                            |
| Undetectable               | 06.2   | 05.7                    | 03.8                | 15.2                       | 69.2                       | 01.9   | 01.4                    | 01.9                | 08.5                       | 86.3                       |
| Detectable                 | 08.6   | 06.5                    | 11.9                | 13.0                       | 60.0                       | 06.6   | 04.9                    | 04.4                | 12.6                       | 71.6                       |
| Unknown/Not Reported       | 09.6   | 07.9                    | 11.4                | 09.6                       | 61.4                       | 03.6   | 02.7                    | 04.5                | 01.8                       | 87.4                       |
| Steady Sexual Partner      |  |                         |                     |                            |                            |  |                         |                     |                            |                            |
| Yes                        | 09.4   | 06.7                    | 05.9                | 12.6                       | 65.4                       | 04.4   | 03.2                    | 03.6                | 08.7                       | 80.2                       |
| No                         | 05.4   | 06.6                    | 10.0                | 14.5                       | 63.5                       | 02.9   | 02.5                    | 02.5                | 08.4                       | 83.7                       |

<sup>a</sup>Engl. = English questionnaire. Span. = Spanish questionnaire.

**Table 5. Ordinal Logistic Regression Models: Treatment Beliefs Regressed on Respondent Characteristics**

|                            | People are now less worried about getting HIV* |                 |                 | HIV is no longer a life-threatening disease* |           |       | HIV transmission is less likely* |           |       | I'm more willing to have sex without a condom* |           |        |
|----------------------------|--|-----------------|-----------------|--|-----------|-------|----------------------------------|-----------|-------|--|-----------|--------|
|                            | OR <sup>a</sup>                                | CI <sup>b</sup> | p               | OR   | CI        | p     | OR                               | CI        | p     | OR   | CI        | p      |
| Age                        |  |                 |                 |  |           |       |                                  |           |       |  |           |        |
| 18-29                      | 1.00   |                 |                 | 1.00   |           |       | 1.00                             |           |       | 1.00   |           |        |
| 30-44                      | 0.90   | 0.73-1.12       | NS <sup>c</sup> | 0.82   | 0.67-1.00 | < .01 | 1.03                             | 0.82-1.30 | NS    | 0.76   | 0.57-1.00 | NS     |
| 45+                        | 1.03   | 0.79-1.33       | NS              | 0.74   | 0.58-0.95 | < .05 | 1.07                             | 0.81-1.41 | NS    | 1.05   | 0.76-1.44 | NS     |
| Gender                     |  |                 |                 |  |           |       |                                  |           |       |  |           |        |
| Male/Transgender           | 1.00   |                 |                 | 1.00   |           |       | 1.00                             |           |       | 1.00   |           |        |
| Female                     | 1.09   | 0.88-1.36       | NS              | 0.89   | 0.72-1.10 | NS    | 0.97                             | 0.77-1.23 | NS    | 1.28   | 0.96-1.71 | NS     |
| Acculturation <sup>d</sup> |  |                 |                 |  |           |       |                                  |           |       |  |           |        |
| White/Other (Engl.)        | 0.93   | 0.77-1.12       | NS              | 0.81   | 0.68-0.96 | < .05 | 0.84                             | 0.69-1.03 | NS    | 1.03   | 0.77-1.36 | NS     |
| Latino (Engl.)             | 0.77   | 0.61-0.96       | < .05           | 0.70   | 0.57-0.87 | < .01 | 0.76                             | 0.58-0.98 | < .05 | 1.17   | 0.85-1.61 | NS     |
| Latino (Span.)             | 1.00   |                 |                 | 1.00   |           |       | 1.00                             |           |       | 1.00   |           |        |
| Sexual Orientation         |  |                 |                 |  |           |       |                                  |           |       |  |           |        |
| Gay/Lesbian                | 1.12   | 0.94-1.35       | NS              | 1.00   | 0.84-1.19 | NS    | 1.04                             | 0.85-1.26 | NS    | 1.17   | 0.89-1.54 | NS     |
| Bisexual                   | 1.16   | 0.90-1.51       | NS              | 1.19   | 0.93-1.52 | NS    | 1.15                             | 0.89-1.50 | NS    | 1.11   | 0.74-1.65 | NS     |
| Straight                   | 1.00   |                 |                 | 1.00   |           |       | 1.00                             |           |       | 1.00   |           |        |
| Education                  |  |                 |                 |  |           |       |                                  |           |       |  |           |        |
| < high school              | 1.00   |                 |                 | 1.00   |           |       | 1.00                             |           |       | 1.00   |           |        |
| High school                | 1.01   | 0.82-1.25       | NS              | 0.84   | 0.69-1.03 | NS    | 0.97                             | 0.78-1.21 | NS    | 0.71   | 0.51-0.99 | < .05  |
| > high school              | 1.19   | 0.96-1.48       | NS              | 0.82   | 0.68-1.00 | NS    | 0.84                             | 0.67-1.05 | NS    | 0.78   | 0.57-1.06 | NS     |
| Viral Load Status          |  |                 |                 |  |           |       |                                  |           |       |  |           |        |
| Undetectable               | 0.86   | 0.73-1.02       | NS              | 0.96   | 0.82-1.12 | NS    | 0.86                             | 0.72-1.02 | NS    | 0.63   | 0.49-0.80 | < .001 |
| Unknown/Not Reported       | 0.81   | 0.66-0.98       | < .05           | 1.01   | 0.84-1.21 | NS    | 0.99                             | 0.81-1.22 | NS    | 0.66   | 0.49-0.90 | < .01  |
| Detectable                 | 1.00   |                 |                 | 1.00   |           |       | 1.00                             |           |       | 1.00   |           |        |
| Steady Sexual Partner      |  |                 |                 |  |           |       |                                  |           |       |  |           |        |
| Yes                        | 1.00   |                 |                 | 1.00   |           |       | 1.00                             |           |       | 1.00   |           |        |
| No                         | 1.07   | 0.92-1.25       | NS              | 0.97   | 0.84-1.11 | NS    | 0.95                             | 0.81-1.12 | NS    | 0.87   | 0.70-1.09 | NS     |

\*See text for exact wording of belief questions.

<sup>a</sup>OR = Odds Ratio (all odds ratios are adjusted). <sup>b</sup>CI = 95% Confidence Interval. <sup>c</sup>NS = Not Significant. <sup>d</sup>Engl. = English questionnaire. Span. = Spanish questionnaire.



## **Respondent Characteristics and Sexual Behavior**

Respondent characteristics crosstabulated with sexual behavior are shown in Table 6. Latinos who completed the questionnaire in Spanish reported greater condom use than did Whites/Others. This difference, however, may be due more to acculturation than to ethnic differences. Consider that Latinos who completed the questionnaire in Spanish also reported greater condom use than did Latinos who completed the questionnaire in English. (Preference for the English questionnaire is an indicator of greater acculturation.) Moreover, there was little difference in condom use between Whites/Others and Latinos who completed the questionnaire in English. As such, the findings suggest that greater acculturation may be linked to lesser condom use.

Among persons who had anal/vaginal sex, the presence or absence of a steady sexual partner appears to have little bearing on the occurrence of unprotected sex (i.e. sex without a condom). Unprotected anal sex was reported by 36.3% of persons with steady partners and 40.0% of persons without steady partners. Unprotected vaginal sex was reported by 39.8% of persons with steady partners and 45.7% of persons without steady partners. Of those persons who reported no anal or vaginal sex, 19.1% had a steady sexual partner, 59.3% reported no steady sexual partner. (Note. Although it is not the focus here, many of the individuals who did not engage in anal or vaginal sex did engage in other types of sex; for example, oral sex.)

The occurrence of unprotected sex varied little with sexual orientation. Unprotected anal/vaginal sex was reported by 22.7%, 30.0%, and 26.5% of gays/lesbians, bisexuals, and straights, respectively.

Unprotected sex differed little by viral load. Of those reporting a low viral load, 25.6% had unprotected anal and/or vaginal sex in the past six months. Of those reporting a higher viral load, 26.3% had unprotected anal and/or vaginal sex in the past six months. Of those who did not report/did not know their viral load, 22.1% had unprotected anal and/or vaginal sex in the past six months.

## **The Association of Beliefs and Respondent Characteristics with Unprotected Sex**

Treatment beliefs are crosstabulated with reports of unprotected anal/vaginal sex in Table 7. The data appear to indicate little association between reports of unprotected sex and any of the four belief statements. This seems to be corroborated by the crude odds ratios in Table 8. These ratios address the bivariate relationship between each of the beliefs and a dichotomous measure of unprotected sex (one category in the measure is anal/vaginal sex without a condom, the other is no anal/vaginal sex or such sex always with a condom). None of the ratios were statistically significant.

Recall, however, that Van de Ven et al. have suggested that the relationship between treatment beliefs and unprotected sex could be masked by confounding factors.<sup>20</sup> To examine this, an ordinal logistic regression with adjusted odds ratios was performed (Table 8). This procedure statistically controlled for various possible confounding factors

**Table 6. Self-Reports of Condom Use by Respondent Characteristics**

|                            | Condom use among respondents who had anal sex |                                 | Condom use among respondents who had vaginal sex |                                 | No anal/vaginal sex, sex with condom, sex without condom: All respondents |                                       |   |
|----------------------------|---|---------------------------------|--|---------------------------------|---|---------------------------------------|---|
|                            | <i>Always used condom</i>                     | <i>Didn't always use condom</i> | <i>Always used condom</i>                        | <i>Didn't always use condom</i> | <i>Didn't have anal/vaginal sex</i>                                       | <i>Had sex and always used condom</i> | <i>Had sex but didn't always use condom</i> |
|                            | <u>%</u>                                      | <u>%</u>                        | <u>%</u>   | <u>%</u>                        | <u>%</u>  | <u>%</u>                              | <u>%</u>                                    |
| Age                        |   |                                 |  |                                 |   |                                       |   |
| 18-29                      | 70.6  | 29.4                            | 63.3   | 36.7                            | 16.9  | 53.8                                  | 29.2  |
| 30-44                      | 59.9  | 40.1                            | 58.5   | 41.5                            | 34.5  | 38.3                                  | 27.2  |
| 45+                        | 61.8  | 38.2                            | 60.0   | 40.0                            | 58.9  | 25.9                                  | 15.2  |
| Gender                     |   |                                 |  |                                 |   |                                       |   |
| Male                       | 62.6  | 37.4                            | 61.1   | 38.9                            | 38.8  | 37.8                                  | 23.4  |
| Female                     | 50.0  | 50.0                            | 57.1   | 42.9                            | 39.8  | 31.3                                  | 28.9  |
| Transgender <sup>a</sup>   | 64.3  | 35.7                            | 00.0   | 00.0                            | 06.7  | 60.0                                  | 33.3  |
| Acculturation <sup>b</sup> |   |                                 |  |                                 |   |                                       |   |
| White/Other (Engl.)        | 47.2  | 52.8                            | 43.2   | 56.8                            | 54.3  | 21.0                                  | 24.7  |
| Latino (Engl.)             | 48.6  | 51.4                            | 60.0   | 40.0                            | 34.2  | 35.5                                  | 30.3  |
| Latino (Span.)             | 80.0  | 20.0                            | 73.9   | 26.1                            | 16.1  | 63.7                                  | 20.2  |
| Sexual Orientation         |   |                                 |  |                                 |   |                                       |   |
| Gay/Lesbian                | 63.4  | 36.6                            | 64.3   | 35.7                            | 39.5  | 37.9                                  | 22.7  |
| Bisexual                   | 63.0  | 37.0                            | 50.0   | 50.0                            | 30.0  | 40.0                                  | 30.0  |
| Straight                   | 40.0  | 60.0                            | 58.4   | 41.6                            | 42.6  | 30.9                                  | 26.5  |
| Education                  |   |                                 |  |                                 |   |                                       |   |
| < high school              | 65.2  | 34.8                            | 62.7   | 37.3                            | 22.7  | 49.1                                  | 28.2  |
| High school                | 60.0  | 40.0                            | 54.1   | 45.9                            | 36.9  | 34.2                                  | 28.8  |
| > high school              | 60.9  | 39.1                            | 60.5   | 39.5                            | 45.7  | 33.2                                  | 21.1  |
| Viral Load Status          |   |                                 |  |                                 |   |                                       |   |
| Undetectable               | 60.2  | 39.8                            | 64.3   | 35.7                            | 36.0  | 38.4                                  | 25.6  |
| Detectable                 | 67.4  | 32.6                            | 58.1   | 41.9                            | 33.3  | 40.4                                  | 26.3  |
| Unknown/Not Stated         | 61.8  | 38.2                            | 57.1   | 42.9                            | 42.5  | 35.4                                  | 22.1  |
| Steady Sexual Partner      |   |                                 |  |                                 |   |                                       |   |
| Yes                        | 63.7  | 36.3                            | 60.2   | 39.8                            | 19.1  | 49.2                                  | 31.7  |
| No                         | 60.0  | 40.0                            | 54.3   | 45.7                            | 59.3  | 23.9                                  | 16.8  |

<sup>a</sup>Transgenders constitute only 3% of the sample. Consequently their data should be interpreted with caution.

<sup>b</sup>Engl. = English questionnaire. Span. = Spanish questionnaire.

**Table 7. HIV Beliefs by Unprotected Anal/Vaginal Sex Status**

|                                       | In general, people are less worried now about getting HIV than they used to be |                                   |                               |                                      |                                      | Because of new HIV treatments such as protease inhibitors, HIV is no longer a life-threatening disease |                                   |                               |                                      |                                      |
|---------------------------------------|--|-----------------------------------|-------------------------------|--------------------------------------|--------------------------------------|--|-----------------------------------|-------------------------------|--------------------------------------|--------------------------------------|
|                                       | <i>Strongly Agree</i><br><u>%</u>  | <i>Somewhat Agree</i><br><u>%</u> | <i>Don't Know</i><br><u>%</u> | <i>Somewhat Disagree</i><br><u>%</u> | <i>Strongly Disagree</i><br><u>%</u> | <i>Strongly Agree</i><br><u>%</u>  | <i>Somewhat Agree</i><br><u>%</u> | <i>Don't Know</i><br><u>%</u> | <i>Somewhat Disagree</i><br><u>%</u> | <i>Strongly Disagree</i><br><u>%</u> |
| No anal/vaginal sex                   | 12.8   | 43.9                              | 09.4                          | 17.8                                 | 16.1                                 | 07.1   | 20.2                              | 03.3                          | 20.8                                 | 48.6                                 |
| Anal/Vaginal sex always with a condom | 15.6   | 34.4                              | 11.1                          | 20.0                                 | 18.9                                 | 18.2   | 25.4                              | 03.9                          | 15.5                                 | 37.0                                 |
| Anal/Vaginal sex without a condom     | 12.0   | 40.2                              | 03.4                          | 25.6                                 | 18.8                                 | 06.9   | 29.3                              | 03.4                          | 23.3                                 | 37.1                                 |

  

|                                       | HIV-positive persons are less likely to transmit HIV during sex if they use the new HIV treatments |                                   |                               |                                      |                                      | I am more willing to have sex without a condom because of new treatments for HIV |                                   |                               |                                      |                                      |
|---------------------------------------|--|-----------------------------------|-------------------------------|--------------------------------------|--------------------------------------|--|-----------------------------------|-------------------------------|--------------------------------------|--------------------------------------|
|                                       | <i>Strongly Agree</i><br><u>%</u>  | <i>Somewhat Agree</i><br><u>%</u> | <i>Don't Know</i><br><u>%</u> | <i>Somewhat Disagree</i><br><u>%</u> | <i>Strongly Disagree</i><br><u>%</u> | <i>Strongly Agree</i><br><u>%</u>  | <i>Somewhat Agree</i><br><u>%</u> | <i>Don't Know</i><br><u>%</u> | <i>Somewhat Disagree</i><br><u>%</u> | <i>Strongly Disagree</i><br><u>%</u> |
| No anal/vaginal sex                   | 07.7   | 07.1                              | 12.0                          | 08.7                                 | 64.5                                 | 03.4   | 02.8                              | 03.9                          | 08.4                                 | 81.6                                 |
| Anal/Vaginal sex always with a condom | 10.6   | 06.1                              | 05.0                          | 13.3                                 | 65.0                                 | 04.4   | 02.2                              | 02.8                          | 05.5                                 | 85.1                                 |
| Anal/Vaginal sex without a condom     | 02.5   | 06.8                              | 07.6                          | 20.3                                 | 62.7                                 | 04.3   | 04.3                              | 04.3                          | 14.5                                 | 72.6                                 |

**Table 8. Ordinal Logistic Regression Models: Unprotected Sex versus Safer Sex Practices Regressed on Respondent Characteristics and Treatment Beliefs**

| Predictor   | Crude           |                 |                 | Adjusted |           |       |
|---|-----------------|-----------------|-----------------|----------|-----------|-------|
|   | OR <sup>a</sup> | CI <sup>b</sup> | p               | OR       | CI        | p     |
| <i>Age</i>  |                 |                 |                 |          |           |       |
| 18-29   | 2.31            | 1.10-4.85       | < .05           | 2.93     | 1.22-7.03 | < .05 |
| 30-44   | 2.09            | 1.17-3.73       | < .05           | 2.49     | 1.28-4.86 | < .01 |
| 45+   | 1.00            |                 |                 | 1.00     |           |       |
| <i>Gender</i>   |                 |                 |                 |          |           |       |
| Female  | 0.77            | 0.45-1.30       | NS <sup>c</sup> | 0.99     | 0.49-1.98 | NS    |
| Male/Transgender  | 1.00            |                 |                 | 1.00     |           |       |
| <i>Acculturation<sup>d</sup></i>                            |                 |                 |                 |          |           |       |
| White/Other (Engl.)   | 1.29            | 0.79-2.10       | NS              | 2.27     | 1.20-4.30 | < .05 |
| Latino (Engl.)  | 1.71            | 0.92-3.17       | NS              | 2.27     | 1.10-4.68 | < .05 |
| Latino (Span.)  | 1.00            |                 |                 | 1.00     |           |       |
| <i>Sexual Orientation</i>                                   |                 |                 |                 |          |           |       |
| Gay/Lesbian   | 0.86            | 0.55-1.34       | NS              | 1.07     | 0.59-1.95 | NS    |
| Bisexual  | 1.26            | 0.63-2.51       | NS              | 1.22     | 0.55-2.72 | NS    |
| Straight  | 1.00            |                 |                 | 1.00     |           |       |
| <i>Education</i>  |                 |                 |                 |          |           |       |
| < high school   | 1.47            | 0.88-2.46       | NS              | 1.81     | 0.88-3.71 | NS    |
| High school   | 1.52            | 0.91-2.53       | NS              | 1.67     | 0.93-3.02 | NS    |
| > high school   | 1.00            |                 |                 | 1.00     |           |       |
| <i>Viral Load Status</i>                                    |                 |                 |                 |          |           |       |
| Low   | 1.21            | 0.76-1.95       | NS              | 1.41     | 0.82-2.44 | NS    |
| Unknown/Not Reported  | 1.26            | 0.71-2.22       | NS              | 1.50     | 0.77-2.92 | NS    |
| Higher  | 1.00            |                 |                 | 1.00     |           |       |
| <i>People are less worried about getting HIV</i>            |                 |                 |                 |          |           |       |
| Amount of agreement   | 0.93            | 0.80-1.09       | NS              | 0.98     | 0.82-1.18 | NS    |
| <i>HIV is no longer a life-threatening disease</i>          |                 |                 |                 |          |           |       |
| Amount of agreement   | 1.01            | 0.88-1.16       | NS              | 1.00     | 0.84-1.19 | NS    |
| <i>HIV-positive persons are less likely to transmit HIV</i> |                 |                 |                 |          |           |       |
| Amount of agreement   | 0.89            | 0.75-1.06       | NS              | 0.85     | 0.68-1.07 | NS    |
| <i>I am more willing to have sex without a condom</i>       |                 |                 |                 |          |           |       |
| Amount of agreement   | 1.17            | 0.96-1.42       | NS              | 1.41     | 1.10-1.82 | < .01 |

<sup>a</sup>OR = Odds Ratio. <sup>b</sup>CI = 95% Confidence Interval. <sup>c</sup>NS = Not Significant. <sup>d</sup>Engl. = English Questionnaire. Span. = Spanish Questionnaire.

Note. Unprotected sex = anal/vaginal sex at least once without a condom in past six months. Safer sex practices = anal/vaginal sex always with a condom in the past six months or no anal/vaginal sex in the past six months. *N* = 423 for adjusted logisitic regression equation.

(primarily demographics). In contrast to the bivariate analyses, this multivariate analysis indicated that *being willing to have sex without a condom because of the new treatments* was a statistically significant predictor of unprotected anal/vaginal sex. The demographic factors had been masking the relationship. None of the other treatment beliefs were found to be significant predictors of unprotected sex.

Of the demographic variables in the multivariate regression equation, two—age and acculturation—were statistically significant predictors of unprotected sex. Persons under the age of 45 were significantly more likely to report unprotected anal/vaginal sex. Compared to Latinos who completed the questionnaire in Spanish, Latinos who completed the questionnaire in English and Whites/Others were more likely to report unprotected anal/vaginal sex.

## DISCUSSION

The majority of the HIV-positive respondents surveyed in this study engaged in anal and/or vaginal sex in the past six months, and the majority of those engaging in such sex followed safer sex practices. This notwithstanding, about one-quarter of the respondents (about one-third of those engaging in anal/vaginal sex) reported unprotected anal/vaginal sex. This finding underscores the need for effective prevention services directed towards HIV-positive persons.

Other sexual risk behaviors also occurred with significant frequency. For example, of those engaging in anal/vaginal sex, 40% reported multiple sexual partners in the past six months, including 24% who reported three or more partners. When those engaging in anal/vaginal sex were asked how often they discussed HIV before having sex, 43% reported rarely/never. Moreover, when asked whether any of their partners were HIV negative, 24% said they did not know. Having multiple partners, not discussing HIV before sex, and not knowing the HIV status of sexual partners are all serious risks factors for the transmission of HIV and should be the focus of prevention services.

This study's findings show substantial optimism among respondents regarding HIV. One in two respondents agreed that people now are less worried about getting HIV than they used to be. And one in three agreed that because of new HIV treatments, HIV is no longer a life-threatening disease. Such optimism suggests that prevention messages which rely on death or danger-avoidance for motivation may not be effective with a large segment of the HIV-positive population. Instead, messages that emphasize other motivating factors (e.g., altruism) may prove to be more useful.

About one in seven respondents agreed that the new treatments reduce the likelihood of HIV transmission, a finding of some importance given that each of the respondents in the study has HIV and can transmit it to others. The finding also poses a serious challenge to prevention and health education because there currently is no clear-cut evidence as to whether the new treatments actually reduce HIV transmission.<sup>22</sup> It will be difficult to counter or even counsel regarding beliefs about HIV transmission and the new treatments when definitive research on the topic has yet to be reported.

The treatment belief about being *willing to have sex without a condom because of new treatments for HIV* was a statistically significant predictor of unprotected sex. However, this association was evident only when a multivariate analysis adjusted for confounding factors (primarily demographics). This finding lends some support to the proposition of Van de Ven et al. that (1) multivariate analyses are needed to assess the association between treatment beliefs and sexual behavior and (2) discrepancies across studies on such beliefs and behavior may be due in part to not using multivariate procedures.<sup>20</sup>

Notwithstanding this, three of the four treatment beliefs considered in this study (i.e. the belief that *people are less worried now about getting HIV*, the belief that *HIV is no longer a life-threatening disease*, and the belief that *HIV-positive persons are less likely to transmit HIV during sex if they use the new HIV treatments*) are similar to those considered by Van de Ven et al. But this study's multivariate analysis did not indicate that these beliefs were predictive of unprotected sex, suggesting that issues are at play in addition to the use or lack thereof of multivariate analysis techniques.

Inconsistent findings concerning HIV beliefs and unprotected sex are not surprising because general research on attitudes and behavior has shown that the two often have little relationship.<sup>23</sup> This same research indicates that the best predictors of behavior are beliefs related to intent rather than affect. For example, whether people say they like church (a measure of affect) is often unrelated to whether they attend church. This is true in part because of confounding factors (a person may have to work during church services, may lack transportation to church, may like sporting events even more than church, and so on). However, if one asks whether a person plans to attend church services (a measure of intent), the answer will likely predict whether the person actually goes to church. Consistent with this, researchers studying beliefs about the new HIV treatments may wish to consider questions about the intent to practice safe sex.

The question in this study about willingness *to have sex without a condom because of new treatments for HIV* was a measure of intent. And this study's multivariate analysis indicated that the question predicted unprotected anal/vaginal sex. It should be noted, however, that the finding is correlational in nature and does not allow for inferences about direction or causality. It could be that persons who have unprotected sex are simply using the new treatments as a rationale for what they would have done anyway. It also could be that intent to have unprotected sex in light of the new treatments and the actual practice of unprotected sex are both determined by some other underlying factor not addressed in this study. Having said this, the finding that willingness *to have sex without a condom because of new treatments for HIV* predicted unprotected sex is consistent with the public health concern that safer sex practices are being adversely affected by beliefs about HIV treatments.

The analyses in this study also found that respondent characteristics were often associated with HIV treatment beliefs and with the practice of unprotected sex. For example, respondents who reported a low viral load were significantly more likely to disagree with the statement about being *more willing to have sex without a condom*. A possible explanation is that persons who have an undetectable viral load are on average more diligent regarding diet, exercise, treatment regimen adherence, and so on. In short they are more "in control," and this may help support their condom use.

Younger respondents, those under age 45, were more likely to report unprotected sex. This may simply reflect the fact that younger persons tend to have sex more often than do older persons. It may also be, however, that the older respondents are more responsive to prevention messages.

Acculturation was found to be adversely associated with reports of unprotected sex. Latinos who completed the questionnaire in English (more acculturated Latinos) were significantly more likely to report unprotected sex than were Latinos who completed the questionnaire in Spanish (less acculturated Latinos). Reports of unprotected sex from Whites/Others were similar to those of Latinos who completed the questionnaire in English, and significantly higher than those of Latinos who completed the questionnaire in Spanish. In a study of 226 HIV-positive Latino men and women at an outpatient clinic in Los Angeles, Marks et al. found that unprotected sex increased with acculturation.<sup>24</sup>

In the present study, acculturation was also found to be associated with beliefs about the new HIV treatments. Latinos who completed the questionnaire in Spanish were more likely to agree with the statement *HIV is no longer a life-threatening disease because of new HIV treatments* than were Latinos who completed the questionnaire in English. Similarly, Latinos who completed the questionnaire in Spanish were more likely to agree with the statement that *HIV-positive persons are less likely to transmit HIV during sex if they use the new treatments* than were Latinos who completed the questionnaire in English. Findings such as these point to the need for culturally sensitive prevention and education programs for HIV-positive persons.

This study's findings have limitations. Behavior related to sensitive topics such as those considered here tend to be underreported. Ryan White CARE Act clients may differ from HIV-positive persons who are not such clients. As with most survey research on HIV-positive persons, probabilistic sampling was not used to select respondents, thus limiting the ability to generalize results to persons not in the study (including other Ryan White CARE Act clients). Because improvements in HIV treatments are ongoing, beliefs about the seriousness of HIV may be changing, and the findings in this study could become dated accordingly. In so far as the study measured self-reports of behavior at a single point in time, it is not possible to use the study's findings to assess whether sexual risk behaviors have increased since the arrival of the new treatments. Other approaches, for instance annual surveys and time series studies of HIV testing databases in Orange County, are needed to address this issue.

Research on HIV treatment beliefs and sexual risk behavior is still relatively new, but such research is critical to the development of effective prevention programs for persons who are HIV positive. Armed with quality information, prevention professionals will be better able to ensure that the new HIV treatments do not exacerbate transmission of the disease they were designed to combat.

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